



TECHNICAL REPORT C6 – WHITLOCK/POLK EVALUATION

Background

This memo provides additional information to the Cobb Paulding Working Group (CPWG) in response to a request generated at the October 19, 2007 meeting. It is intended to address issues related to Whitlock Avenue/Polk Street corridor improvement options. The Whitlock/Polk project fell within the "Projects for Further Discussion (Extensive)" category of the CPWG's findings from the October 19, 2007 meeting.

This effort entailed a focused analysis within a more narrowly defined study area of the broader CPWG study area. This area, defined as the "Central Cobb Area," is depicted by the green outline on the attached map. A further narrowed level of geography, the "Marietta Loop Area" as depicted in brown on the map was defined and also used in the evaluation.

Additional background information includes:

- Cobb CTP travel demand modeling indicates that a majority of SR 120 travelers destined for the "Central Cobb Area" originate from Marietta or West Cobb locations.
- Improvements to Whitlock Avenue/Polk Street are one, integral element of the overall system of improvements recommended by CTP study for consideration by the CPWG. The list of improvements was included in materials previously provided to CPWG members.
- Numerous CPWG recommended roadway improvements serve to direct traffic originating in Paulding and West Cobb towards I-75 and I-20 via paths away from Marietta Square and Whitlock Avenue.
- Alternative routes for the Marietta area are restricted by Kennesaw Mountain on the north and the National Battlefield.
- Whitlock Avenue is included on the state route system as SR 120. As all state routes are administered by the Georgia Department of Transportation (GDOT), any modifications to this roadway will likely require GDOT approval and be dependent on demonstrated mobility benefits along the corridor.
- Roadway improvement solutions proposed as part of this analysis will best be able to solve identified capacity needs if implemented in their entirety - the complete length of the corridor the proposed project(s) is to serve. Partial improvements, may, however, still provide some operational benefits along portions of the corridor.

Whitlock/Polk Alternatives Considered

The following four alternatives were evaluated in more detail with the travel demand model, as requested by the CPWG. The attached map generally depicts the corridor locations. The Powder Springs-South Cobb Connector is assumed to exist in all four alternatives.

- Whitlock Avenue (SR 120) widening to 4 lanes from North Marietta Parkway (SR 120 Loop) to John Ward Road



Cobb County Comprehensive Transportation Plan

- Whitlock Avenue/Polk Street upgrade to a 3-lane pair
 - Whitlock Avenue = 2 lanes eastbound and 1 lane westbound
 - Polk Street = 2 lanes westbound and 1 lane eastbound
- New 4-lane divided roadway connection from John Ward Road to Powder Springs Street, connecting to County Services Parkway
- Whitlock Avenue widening to 2 lanes westbound and 1 lane eastbound from Kirkpatrick Street to John Ward Road

Traffic Service/Model Results

Results generated by the travel demand modeling exercise are divided into two levels: "Central Cobb Area" and "Primary Corridors."

Central Cobb Area

Central Cobb Area Aggregate Performance Measures

Performance Measures	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Vehicle Miles Traveled (VMT)	4,179,516	4,166,664	4,194,391	4,147,897
Vehicle Hours Traveled (VHT)	196,683	197,254	199,773	198,923
Travel Time Index (TTI)	1.49	1.50	1.51	1.53

"Central Cobb Area" Summary Comments

- Alternative 1 provides the best performance, with the lowest TTI (1.49).
- Alternatives 2 and 3 follow closely behind.
- Alternative 4 provides the worst TTI performance at the study area level.

Primary Corridors

The "Primary Corridors" statistics for each of the four alternatives are presented in the following table. "Primary Corridors" includes Polk Street, Whitlock Avenue, and new connections included in alternative three.



Cobb County Comprehensive Transportation Plan

Primary Corridors Performance Statistics

Alternative 1

Corridor	Lanes	Length (miles)	PM VC Ratio	PM Average Volume	Daily Average Volume	Daily Delay (hours)	Travel Time Index	PM Average Speed (mph)	Daily Average Speed (mph)	PM Average Travel Time (min)	Daily Travel Time (min)
Polk Westbound	1	0.95	1.07	3,301	5,991	512	2.25	6.0	12.3	9.4	4.6
Polk Eastbound	1	0.95	0.55	1,678	6,704	526	2.15	23.1	12.9	2.5	4.4
Whitlock Westbound	2	1.58	1.06	9,864	27,089	2,244	2.01	10.3	19.1	9.2	4.9
Whitlock Eastbound	2	1.58	0.66	6,151	27,082	1,255	1.56	29.8	24.6	3.2	3.9
Total	1.6	5.05	0.85	20,994	66,866	4,537	1.85	12.3	19.8	6.1	4.4

Alternative 2

Corridor	Lanes	Length (miles)	PM VC Ratio	PM Average Volume	Daily Average Volume	Daily Delay (hours)	Travel Time Index	PM Average Speed (mph)	Daily Average Speed (mph)	PM Average Travel Time (min)	Daily Travel Time (min)
Polk Westbound	2	0.95	1.08	6,616	14,470	1,202	2.22	6.1	12.5	9.3	4.5
Polk Eastbound	1	0.95	0.58	1,773	6,358	258	1.59	22.8	17.4	2.5	3.3
Whitlock Westbound	1.3	1.58	1.05	7,122	20,169	1,859	2.14	10.7	18.2	8.9	5.2
Whitlock Eastbound	2	1.58	0.64	5,984	27,452	1,618	1.72	30.7	22.4	3.1	4.2
Total	1.6	5.05	0.84	21,495	68,449	4,937	1.93	11.6	18.5	6.0	4.4

Alternative 3

Corridor	Lanes	Length (miles)	PM VC Ratio	PM Average Volume	Daily Average Volume	Daily Delay (hours)	Travel Time Index	PM Average Speed (mph)	Daily Average Speed (mph)	PM Average Travel Time (min)	Daily Travel Time (min)
Polk Westbound	1	0.95	0.98	3,019	7,598	543	2.04	7.3	13.5	7.7	4.2
Polk Eastbound	1	0.95	0.68	2,102	7,778	350	1.66	19.4	16.7	2.9	3.4
Whitlock Westbound	1.1	1.58	1.00	5,743	17,246	2,069	2.47	8.2	15.6	11.6	6.1
Whitlock Eastbound	1.1	1.58	0.69	3,966	17,256	1,815	2.29	22.8	16.9	4.1	5.6
Total	1.1	5.05	0.84	14,830	49,878	4,777	2.23	10.8	15.9	6.9	5.1
John Ward/County Services Conn South	2	0.99	0.5	3,174	12,923	197	1.26	30.4	26.9	2	2.2
John Ward/County Services Conn North	2	0.99	0.97	6,233	13,093	385	1.51	13.8	22.6	4.3	2.6

Alternative 4

Corridor	Lanes	Length (miles)	PM VC Ratio	PM Average Volume	Daily Average Volume	Daily Delay (hours)	Travel Time Index	PM Average Speed (mph)	Daily Average Speed (mph)	PM Average Travel Time (min)	Daily Travel Time (min)
Polk Westbound	1	0.95	1.04	3,197	9,210	800	2.28	6.5	12.2	8.8	4.6
Polk Eastbound	1	0.95	0.67	2,070	7,790	343	1.64	20.5	16.8	2.8	3.4
Whitlock Westbound	1.7	1.58	1.01	8,011	20,628	2,442	2.45	8.6	15.8	11.0	6.0
Whitlock Eastbound	1	1.58	0.81	3,775	16,285	1,663	2.25	19.2	17.1	4.9	5.5
Total	1.2	5.05	0.92	17,053	53,913	5,248	2.26	10	15.8	7.1	5.1

Notes:

- (1) Non-integer number of lanes resulting from corridor segments with different number of lanes.
- (2) Corridor extents: Whitlock Avenue - Marietta Pkwy to John Ward Rd.; Polk Street - Marietta Pkwy to Whitlock Ave.



Cobb County Comprehensive Transportation Plan

"Primary Corridors" Summary Comments

- Alternative 1 provides the best performance, followed closely by Alternative 2. These two alternatives have the lowest combined corridor TTI (1.85 and 1.93, respectively) and daily average travel time (both 4.4 minutes). This is not surprising because these 2 alternatives add the most capacity to the corridor.
- The corridor performance of Alternatives 3 and 4 lags that of Alternatives 1 and 2. TTI is 2.23 and 2.26, respectively, and daily average travel time for both is 5.1 minutes.

The table below presents the percent of traffic on Whitlock Avenue west of the Polk Street Extension traveling to and/or from inside the Marietta Loop Area.

Whitlock Avenue Traffic To/From Inside Marietta Loop Area

Alternative 1	Alternative 2	Alternative 3	Alternative 4
9.5%	9.9%	11.8%	10.5%

Notable Findings

- Alternative 1 provides the best performance, although the performance of Alternative 2 is not far behind.
- Alternative 3 provides good "Central Cobb Area" performance despite poorer "Primary Corridors" performance than most of the other alternatives. This is not surprising since this alternative did not directly improve the Whitlock or Polk corridors, instead adding capacity to possibly divert some traffic away from the corridor. By enabling the diversion of traffic away from Whitlock Avenue, Scenario 3 also results in the highest share of inside Marietta Loop Area traffic (11.8 percent).

Implementation and Constructability

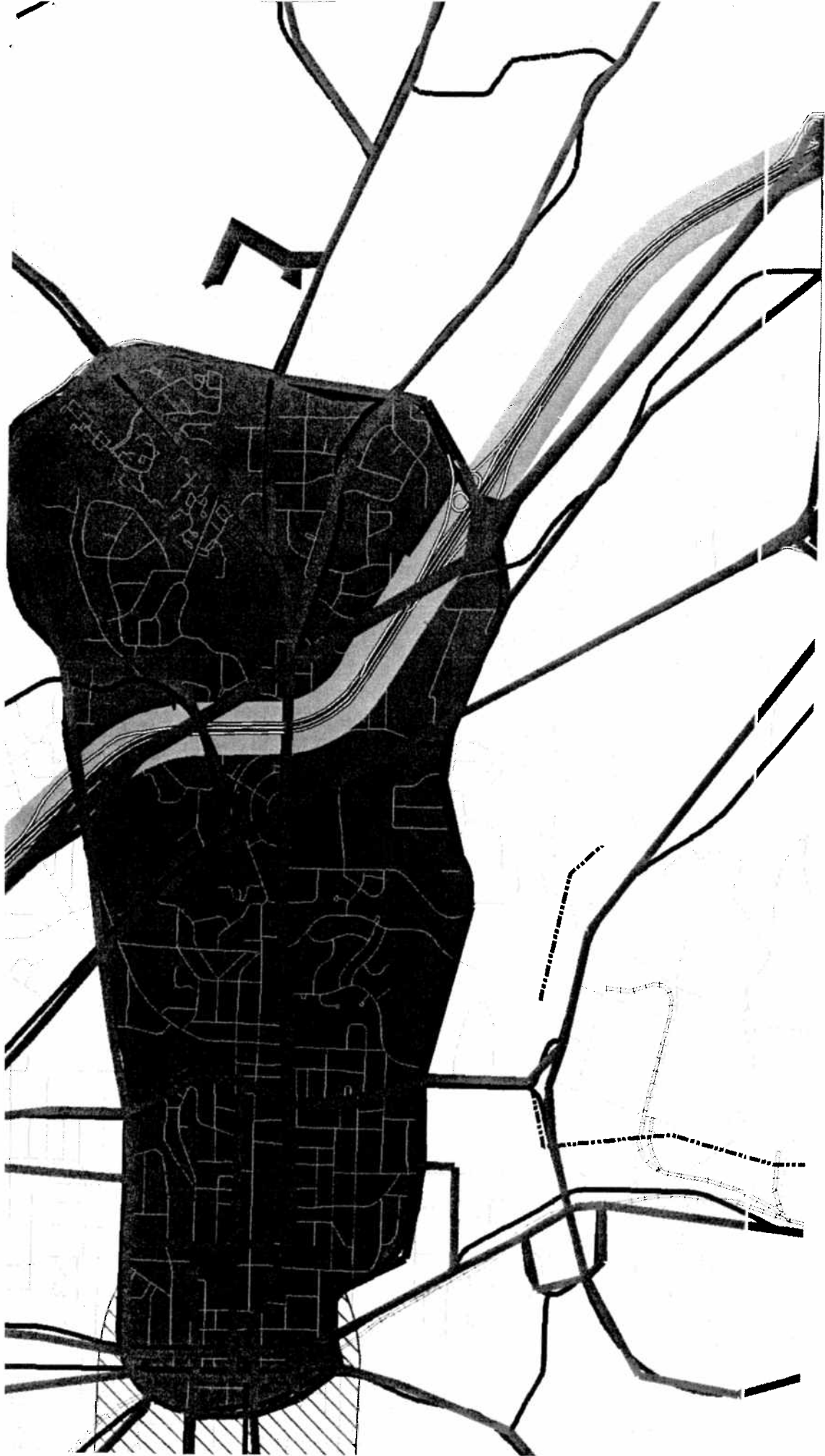
The following briefly describes potential implications associated with implementation of the four proposed alternatives.

- Alternative 1 – Widening Whitlock Avenue to 4 lanes from North Marietta Parkway to John Ward Road
 - Significant ROW required
 - Likely to encounter significant NEPA, 4F, and other approvals
- Alternative 2 – Upgrading Whitlock Avenue/Polk Street to 3-lane pair
 - Substantially utilizes existing roadway footprints (approximately 32 feet curb-to-curb existing width), relying on lane widths of 10 and 11 feet.
 - Few impacts to trees and avoidance of cemeteries.
 - Roadways designed "context sensitively" and with posted speed of 30 mph.
 - Truck traffic restricted from Polk Street
 - Likely to involve NEPA, 4F, and other approvals



Cobb County Comprehensive Transportation Plan

- Alternative 3 – New 4-lane divided roadway connection from John Ward Road to Powder Springs Street, connecting at County Services Parkway (Mr. Blackwell's concept)
 - Significant ROW required
 - Likely to encounter significant NEPA, 4F, and other approvals
- Alternative 4 – Whitlock Avenue widening to 2 lanes westbound and 1 lane eastbound from Kirkpatrick Street to John Ward Road
 - Moderate amount of ROW required
 - Likely to involve NEPA, 4F, and other approvals



ERROR: undefined
OFFENDING COMMAND: &k!G?.+

STACK: